Claims

1. Tumour vaccine for administration to a patient, characterised in that it contains tumour cells which themselves present peptides derived from tumour antigens in an HLA context and at least some of which have at least one MHC-I-haplotype of the patient on the cell surface, and which have been charged with one or more peptides a) and/or b) in such a way that the tumour cells are recognised as foreign by the immune system of the patient, in context with the peptides, and trigger a cellular immune response, the peptides

a) acting as ligands for the MHC-I-haplotype which is common to the patient and the tumour cells of the vaccine, and are different from peptides which are derived from proteins expressed by the cells of the patient, or

b) acting as ligands for the MHC-I-haplotype, which is common to the patient and to the tumour cells of the vaccine, and are derived from tumour antigens which are expressed by the patient's cells and are present in a concentration on the tumour cells of the vaccine which is higher than the concentration of a peptide derived from the same tumour antigen as the one expressed on the patient's tumour cells.

2. Tumour vaccine according to claim 1, characterised in that it contains autologous tumour cells.

3. Tumour vaccine according to claim 1, characterised in that it contains allogenic tumour cells.

4. Tumour vaccine according to claim 3, characterised in that the allogenic tumour cells are cells of one or more cell lines, of which at least one cell line expresses at least one, preferably several tumour

antigens, which are identical to the tumour antigens of the patient to be treated.

5. Tumour vaccine according to one of claims 1 to 4, characterised in that it consists of a mixture of autologous and allogenic cells.

6. Tumour vaccine according to claim 1, characterised in that peptide a) or b) is an H2-K^d-ligand.

7. Tumour vaccine according to claim 1, characterised in that peptide a) or b) is an H2-K^b-ligand.

8. Tumour vaccine according to claim 1, 6 or 7, characterised in that peptide a) is derived from a naturally occurring immunogenic protein or a cellular breakdown product thereof.

9. Tumour vaccine according to claim 8, characterised in that peptide a) is derived from a viral protein.

10. Tumour vaccine according to claim 9, characterised in that the peptide is derived from an influenza virus protein.

11. Tumour vaccine according to claim 10, characterised in that the peptide has the sequence Leu Phe Glu Ala Ile Glu Gly Phe Ile.

12. Tumour vaccine according to claim 10, characterised in that the peptide has the sequence Ala Ser Asn Glu Asn Met Glu Thr Met.

13. Tumour vaccine according to claim 8, characterised in that peptide a) is derived from a bacterial protein.

14. Tumour vaccine according to claim 1, characterised in that peptide a) is derived from a tumour antigen

foreign to the patient.

15. Tumour vaccine according to claim 1, characterised in that peptide a) is a synthetic peptide.

16. Tumour vaccine according to claim 15, characterised in that the peptide has the sequence Phe Phe Ile Gly Ala Leu Glu Glu Ile.

17. Tumour vaccine according to one of claims 1 to 16, characterised in that the tumour cells have been treated with a number of peptides of different sequences.

18. Tumour vaccine according to claim 17, characterised in that the peptides differ in that they bind to different HLA-subtypes.

19. Tumour vaccine according to claim 17, characterised in that the peptides differ from one another in terms of their sequence which is not crucial to HLA-binding.

20. Tumour vaccine according to one of claims 1 to 19, characterised in that it also contains tumour cells which are transfected with a cytokine gene.

21. Tumour vaccine according to claim 20, characterised in that the cytokine is IL-2 and/or IFN-γ.

22. Tumour vaccine according to one of claims 1 to 21, characterised in that it also contains fibroblasts which have been treated with a peptide b).

23. Tumour vaccine according to one of claims 1 to 22, characterised in that it also contains dendritic cells which have been treated with a peptide b) and/or with a peptide binding to an MHC-II molecule.

24. Process for producing a tumour vaccine containing

tumour cells for administering to a patient, characterised in that tumour cells which themselves present peptides derived from tumour antigens in an HLA context and of which at least some express at least one MHC-I-haplotype of the patient, are treated with one or more peptides which

a) act as ligands for the MHC-I-haplotype which is common to the patient and the tumour cells of the vaccine, and are different from peptides derived from proteins which are expressed by the patient's cells, or

b) act as ligands for the MHC-I-haplotype common to the patient and the tumour cells of the vaccine, and are derived from tumour antigens which are expressed by the patient's cells,

the tumour cells being incubated with one or more peptides a) and/or b) for such a time and in such a quantity, in the presence of an organic polycation, that the peptides are bound to the tumour cells in such a way that they are recognised as foreign by the patient's immune system, in context with the tumour cells, and trigger a cellular immune response.

25. Process according to claim 24, characterised in that polylysine is used as the polycation.

26. Process according to claim 25, characterised in that polylysine having a chain length of about 30 to about 300 lysine groups is used.

27. Process according to one of claims 24 to 26, characterised in that the polycation is used in an at least partially conjugated form.

28. Process according to claim 27, characterised in

that the polycation is conjugated with transferrin.

29. Process according to one of claims 24 to 27, characterised in that the cells are also treated in the presence of DNA.

30. Process according to claim 29, characterised in that the DNA is a plasmid.

31. Process according to claim 29 or 30, characterised in that the ratio of DNA to polycation, which is optionally partially conjugated with a protein, is about 1:2 to about 1:5.

32. Process according to one of claims 29 to 31, characterised in that the cells are melanoma cells.

33. Process according to claim 24, characterised in that peptide a) and/or b) is used in an amount of about 50 μg to about 160 μg per 1×10^5 to 2×10^7 cells.

34. Application of the process according to one of claims 24 to 32 to fibroblasts, in which a peptide b) derived from a tumour antigen of the patient is used as the peptide.

35. Application of the process according to one of claims 24 to 33 to dendritic cells, in which a peptide b) derived from a tumour antigen of the patient and/or a peptide which binds to an MHC-II molecule of the patient is used as the peptide.